

REMARKS

The present invention relates to a process for manufacturing an electret article, and to an apparatus therefor.

According to the process and apparatus, melt-extruded thermoplastic resin fibers are passed through a mist space substantially formed from droplets of a polar liquid, wherein the average diameter of the droplets is less than 20 μm , and then collecting the fibers, which contain electrical-chargeability enhancing agents, and wherein the fibers are not wetted upon passing through the mist space and are not subjected to a drying step after passing through the mist space.

Office Action - Failure To Examine Claims

In the Office Action dated June 1, 2012, it was indicated in the Office Action Summary that claims 1 and 3 - 10 were pending and were rejected. These claims were rejected under 35 U.S.C. 112, first and second paragraphs, and under 35 U.S.C. 103, as discussed in more detail below. It appears that claims 11 - 14, which were added as new claims in the Amendment filed April 27, 2012, were not examined. In view thereof, it is respectfully submitted that the present Office Action should be withdrawn, and a new replacement Action should be issued.

Claim Rejections – 35 USC §112

The rejection under the second paragraph of 35 U.S.C. 112 was the same as stated in the previous Office Action. In particular, it was indicated that it is unclear how the fibers are not wetted upon passing through the mist space, evidently, because it is surmised that the mist would wet the fibers to some degree even if only for a fraction of time before such mist is evaporated, and the Office Action indicated a need for an adequate explanation as to what is encompassed by the phrase “not wetted”.

The rejection under 35 USC 112, first paragraph, as failing to comply with the enablement requirement was also the same as stated in the previous Office Action.. In particular, the Office Action questioned enablement in view of an asserted lack of ability to appraise the degree of wettability and the Examiner's apparent expectation that the fibers would be wetted upon passing through the mist space in view of the prior art.

Claim Rejections – 35 USC §103(a)

Claims 1 and 3-10 were rejected under 35 USC 103(a) as being unpatentable over Angadjivand et al (US 6,375,886) in view of Morozov et al (US 2002/0048770). This rejection, set forth as pages 4 – 13, is substantially the same as the statement of the rejection in the previous Office Action of October 27, 2011. Although Applicant has previously explained distinctions of the present invention vis-à-vis the cited art references, it appears that the Examiner desires some further explanation as to the meaning of the phrase “not wetted” in order for the Examiner to confirm if the present claimed invention distinguishes over the cited art references.

Response - 35 USC 112

In response to the rejections under 35 USC 112, first and second paragraphs, and to the apparent underlying concern of the Examiner as to how the fibers are “not wetted” in the process of the present invention, Applicant notes that this important aspect of the present claimed invention is addressed in multiple parts of the specification.

First, in the paragraph bridging pages 2 – 3 of the specification, the work of the present inventors in developing the present invention is described, including specifically identifying as an aspect thereof that a drying procedure becomes unnecessary because of, *inter alia*,

“...a drying procedure becomes unnecessary because an average diameter of the droplets used is less than 20 μm , and thus, the thermoplastic resin fibers are not wetted. It is believed that the smaller droplets have a higher surface tension, and thus, do not wet the thermoplastic resin fibers.”

Furthermore, in the description of the operation of the process and apparatus of the presently claimed invention, e.g., in the paragraph bridging pages 5 – 6, and in the first full paragraph at page 6, it is again clearly explained that according to the present invention the thermoplastic fibers are not wetted, and that therefore it is possible to omit a procedure for drying the thermoplastic resin fibers in carrying out the presently claimed invention.

It is furthermore described in the paragraph bridging pages 10 – 11 of the specification that:

“The reason why the thermoplastic resin fibers are not wetted is unclear when the average diameter of the droplets is less than 20 μm . The present inventors believe that smaller droplets have a higher surface tension, and thus do not wet the thermoplastic resin fibers when in contact therewith.”

In this regard, although Applicants have offered what they believe to be a possible theoretical explanation of the reason that the fibers are not wetted and the present invention is successful, it is noted that inventors are not required to present a theoretical explanation, and Applicant’s factual disclosure that the thermoplastic resin fibers are not wetted when the droplet size is less than 20 μm is sufficient. No further evidence should be considered necessary. However, it is noted that Applicant discusses the operation further with respect to the fibers as being “not wetted”, in terms that a person skilled in the art under of 35 USC 112 would certainly be enabled to practice the present invention as claimed (e.g., see also paragraphs bridging pages 11 through page 13 of the specification.)

Accordingly, it is respectfully submitted that the rejections under 35 USC 112, first and second paragraphs, should be withdrawn forthwith.

Response - 35 USC 103

Applicant respectfully traverses the §103 rejection, and requests the Examiner's further consideration and withdrawal of the §103 rejection for the reasons set forth below. Applicant's attorney had previously requested an Interview with the Examiners in the event that Applicant's previous Amendment did not result in withdrawal of the rejections. In the event that the Examiner may still not accept Applicant's comments and explanations and withdraw the rejections, including when claims 11 - 14 have been examined, an Interview is requested with Examiner Dahimene and Supervisory Patent Examiner Norton.

Regarding the earlier claim amendments to explicitly recite that the fibers are not wetted upon passing through the mist space, this was further to the recitation that the fibers are subjected to drying step after passing through the mist space, in contrast to the cited prior art references. This further recitation of the fibers being not wetted is understood, based on earlier discussions with the Examiner, to be a differentiation *vis-à-vis* the prior art. There is no basis in the prior art for recognizing carrying out the operation of passing the electrical-chargeability enhancing agent containing thermoplastic resin fibers in accordance with the present invention through a mist space to substantially form droplets of a polar liquid wherein the average diameter is less than 20 μm , such that the fibers are not wetted upon passing through the mist space, and therefore do not need to be subjected to a drying step after passing through the mist space.

The same applies *a fortiori* to the cases of the even smaller droplets having average diameter being 15 or less (claims 11 and 13) and even more so in the case of having an average diameter of 12 or less (claims 12 and 14).

Applicant respectfully submits that the whole of the combination of features recited in the present claims involves and contributes to the invention and the operating feature of the fibers being “not wetted upon passing through the mist space”, and therefore not requiring being subjected to a drying step after passing through the mist space.

In the repeated rejection of claims 1 and 3-10 under 35 USC 103(a) based on Angadjivand in view of Morozov, the assertion of motivation to combine the Angadjivand and Morozov references together does not find bases in the references, absent knowledge of the present claimed invention, that would lead a person of ordinary skill in the art to select features so as to derive the presently claimed invention.

There is no explanation in the Office Action of how one of ordinary skill in the art would pick and choose from the broad teachings of Angadjivand and modify only selected portions thereof based on Morozov, in a particular manner so as to derive the present claimed invention. In the absence of such an explanation citing the specific basis in the prior art references, it still must be concluded that hindsight reasoning is being used to formulate the rejection.

In the Response to Arguments section, paragraph 3, at pages 11 - 13, the Examiner referred to a case described in Angadjivand where “It may be possible,

however, for no water to be present on the collector if , for example, the distance between the origin of the free-fiber and the collector is so great that the polar liquid dries while on the free-fiber rather than while on the collected web."

This closest disclosure of the Angadjivand reference cited is part of the paragraph appearing at column 8, lines 12 – 32, and based thereon the Office Action emphasized that Angadjivand allegedly teaches that it is possible for no water to be present on the collector of Angadjivand (see collector 26 in Fig. 1 of Angadjivand).

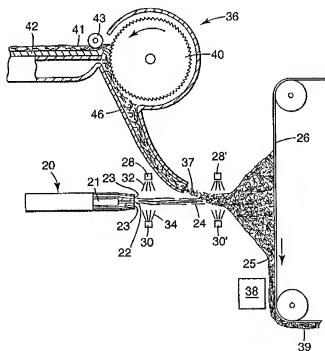


Fig. 1

However, when the whole teaching of Angadjivand at column 8, lines 12 – 32, is carefully considered, it seen that Angadjivand is merely indicating that, in one embodiment, the collector (26) is not wetted. I.e., Angadjivand simply teaches that it “may be” possible

“for no water to be present on the collector, if, for example the distance between the origin of the free fiber and the collector is so great that the polar liquid dries while on the free fiber rather than while on the collected web.” (col. 8, lines 18 - 22 of Angadjivand, emphasis added)

Thus, Angadjivand clearly admits to wetting the fibers in every embodiment thereof, but that in one embodiment, if the distance between the origin of the free-fiber and the collector is sufficiently great, the polar liquid may dry when on the free-fiber rather than when the free-fiber rather than the normal case after being collected on the web.

In distinct contrast to the foregoing actual teachings of Angadjivand, Applicant’s claims require that “the fibers are not wetted upon passing through said mist space” (see claim 1). This clearly and unequivocally distinguishes over the teachings of Angadjivand, which only teaches that, in one non-preferred embodiment, that it “may be possible” for “no water to be present on the collector.” (emphasis added). There is no actual teaching in Angadjivand nor any modification suggested based on Morozov that would lead to a mist space in Angadjivand where the fibers are not wetted.

Still further with respect the Examiner's selective citation of only a part of the paragraph appearing at column 8, lines 12 -32, consideration of the whole paragraph makes it even more clear that a person skilled in the art following the teachings of Angadjivand would not be lead in a direction so as to derive the presently claimed invention.

In the first place, in the sentence immediately following the last portion of the Angadjivand disclosure cited at pages 5 – 6 of the Office Action, Angadjivand states that:

“In a preferred embodiment of the invention, however, the distance between origin and collector are not so great, and the polar liquid is employed in such amounts that the collected web is wet with the polar liquid.” (column 8, lines 22 - 26).”

The Angadjivand reference further goes on to describe a more preferred embodiment:

“More preferably, the web is so wet that the web will drip when slight pressure is applied.” (Angadjivand column 8, lines 26 - 27).

Still further, the part of the noted Angadjivand paragraph not cited by the Examiner goes on to teach that:

“Still more preferably, the web is substantially or completely saturated with the polar liquid at the point where the web is formed on the collector. The web may be so saturated that the polar liquid regularly drips from the web without any pressure being applied.” (column 8, lines 29 - 32 of Angadjivand).

Considering the whole teachings of the Angadjivand reference, and what Angadjivand teaches as preferred and more preferred, it is clear that one following the teachings of Angadjivand would, in all cases, wet the fibers with the polar liquid.

The Examiner has not explained why one of ordinary skill in the art, based on knowledge pre-existing in the art, and not based on hindsight knowledge of the present claimed invention, would veer away from the main thrust of the teachings of Angadjivand.

Furthermore, there is no teaching in the secondary Morozov reference that would lead a person of ordinary skill in the art of electret technology to consider modifying the teachings of Angadjivand to arrive at the presently claimed invention. Again it is noted that Morozov is directed to different technology, viz. the electrospraying of solutions of substances for mass fabrication of chips. To an extent, the Office Action has even admitted that Morozov is not pertinent, in the Examiner's admission at page 7 (lines 2 - 4) of the Office Action that the Examiner is only relying on Morozov for teaching that droplet sizes ranging from 0.3 to 20 microns can be conventionally obtained, and for a capability of obtaining a level where evaporation of the droplets stream becomes possible. The disclosure of Morozov has no relationship to the teachings of the Angadjivand reference, and based on Angadjivand a person of ordinary skill in the art making an electret web would not have any reason to deviate from Angadjivand's wetted fibers and veer away therefrom so as to derive the present claimed invention.

In Angadjivand, in every case, the polar liquid is clearly present in that form (i.e., as a liquid) on the fibers. The possibility mentioned in Angadjivand (in a non-preferred embodiment) that the polar liquid on the fibers may dry before reaching the collector (26) clearly acknowledges that "...the polar liquid dries while on the free-fiber rather than while on the collected web." (see col. 8, lines 21 - 22 of Angadjivand).

Thus, a person of ordinary skill in the art would clearly not be led by Angadjivand, even with background knowledge of Morozov, to derive the presently claimed invention, i.e., wherein it is required that “the fibers are not wetted upon passing through said mist space and are not subjected to a drying step after passing through said mist space”.

In view of the foregoing, withdrawal of the rejection under 35 U.S.C. § 103(a) with respect to all pending claims, including claims 11 - 14, which the Examiner has not even commented upon, is respectfully submitted to be the proper.

Although the foregoing describes sufficient reasons for withdrawal of the rejection under 35 USC 103(a), Applicant also further addresses the Examiner’s repeated assertions (at pages 8 - 9 of the Office Action) regarding what constitutes an “effective amount” *vis-à-vis* the important preferred embodiment of the present invention as set forth in claim 3.

First, Angadjivand’s very generalized disclosure of spraying polar liquid on the fibers does not specify what quantity is sufficient to constitute an “effective amount”.

Applicant again notes that the disclosure in Angadjivand as to an “effective amount” does not constitute a teaching that would result in selection by a person of ordinary skill in the art of a value within the scope of the present claims. In other words, Angadjivand’s teaching of an “effective amount”, on which the rejection also relies, is merely a invitation to conduct experiments, and provides no basis for a person of

ordinary skill in the electret art to select the value of “500 or more” as is specified in independent claim 3.

In view of the foregoing, independent claims 1, 3, and 10, dependent claims 4 - 9, independent claim 10, and yet-to-be examined claims 11 - 14 are not obvious and are patentable over the cited art of record. Accordingly, withdrawal of the rejection under 35 USC 103(a) is respectfully submitted to be proper.

Conclusion

In view of the above, reconsideration and allowance of claims 1 and 3 – 14 of this application are now believed to be in order, and such actions are hereby earnestly solicited.

If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned attorney at the local Washington, D.C. telephone number listed below.

Again, in view of the history of this application, it appears that an Interview with Examiner Dahimene and Supervisory Patent Examiner Norton jointly, if necessary, could be helpful to resolve the prosecution of this application.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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